SEQUENCE LISTING

<110> Xia, Menghang
      Williams, Mark E.

<120> Nucleic Acid Molecules Encoding Novel
   Human Low-Voltage Activated Calcium Channel Proteins,
   Designated - Alpha 1I-1 and Alpha 1I-2, Encoded Proteins and
   Methods of Use Thereof

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<140> PCT/US2004/031820
<141> 2004-09-28

<150> 60/508,112
<151> 2003-10-02

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            35                  40                  45
Val Pro His Pro Asp Leu Ala Pro Ile Ala Phe Phe Cys Leu Arg Gln
        50                  55                  60
Thr Thr Ser Pro Arg Asn Trp Cys Ile Lys Met Val Cys Asn Pro Trp
65                  70                  75                  80
Phe Glu Cys Val Ser Met Leu Val Ile Leu Leu Asn Cys Val Thr Leu
                85                  90                  95
Gly Met Tyr Gln Pro Cys Asp Asp Met Asp Cys Leu Ser Asp Arg Cys
            100                 105                 110
Lys Ile Leu Gln Val Phe Asp Asp Phe Ile Phe Ile Phe Phe Ala Met
            115                 120                 125
Glu Met Val Leu Lys Met Val Ala Leu Gly Ile Phe Gly Lys Lys Cys
        130                 135                 140
Tyr Leu Gly Asp Thr Trp Asn Arg Leu Asp Phe Phe Ile Val Met Ala
145                 150                 155                 160
Gly Met Val Glu Tyr Ser Leu Asp Leu Gln Asn Ile Asn Leu Ser Ala
                165                 170                 175
Ile Arg Thr Val Arg Val Leu Arg Pro Leu Lys Ala Ile Asn Arg Val
            180                 185                 190
Pro Ser Met Arg Ile Leu Val Asn Leu Leu Leu Asp Thr Leu Pro Met
            195                 200                 205
Leu Gly Asn Val Leu Leu Leu Cys Phe Phe Val Phe Phe Ile Phe Gly
        210                 215                 220
Ile Ile Gly Val Gln Leu Trp Ala Gly Leu Leu Arg Asn Arg Cys Phe
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- 16 -

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Gly Asp Asn Gly Ile Met Gly Cys His Glu Ile Pro Pro Leu Lys Glu
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Gln Gly Arg Glu Cys Cys Leu Ser Lys Asp Asp Val Tyr Asp Phe Gly
     290                 295                 300
Ala Gly Arg Gln Asp Leu Asn Ala Ser Gly Leu Cys Val Asn Trp Asn
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Arg Tyr Tyr Asn Val Cys Arg Thr Gly Ser Ala Asn Pro His Lys Gly
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Ala Ile Asn Phe Asp Asn Ile Gly Tyr Ala Trp Ile Val Ile Phe Gln
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Val Ile Thr Leu Glu Gly Trp Val Glu Ile Met Tyr Tyr Val Met Asp
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Ala His Ser Phe Tyr Asn Phe Ile Tyr Phe Ile Leu Leu Ile Ile Val
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Gly Ser Phe Phe Met Ile Asn Leu Cys Leu Val Val Ile Ala Thr Gln
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Phe Ser Glu Thr Lys Gln Arg Glu His Arg Leu Met Leu Glu Gln Arg
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Gln Arg Tyr Leu Ser Ser Ser Thr Val Ala Ser Tyr Ala Glu Pro Gly
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Asp Cys Tyr Glu Glu Ile Phe Gln Tyr Val Cys His Ile Leu Arg Lys
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Ala Lys Arg Arg Ala Leu Gly Leu Tyr Gln Ala Leu Gln Ser Arg Arg
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Gln Ala Leu Gly Pro Glu Ala Pro Ala Pro Ala Lys Pro Gly Pro His
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Ala Lys Glu Pro Arg His Tyr Gln Leu Cys Pro Gln His Ser Pro Leu
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Asp Ala Thr Pro His Thr Leu Val Gln Pro Ile Pro Ala Thr Leu Ala
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Ser Asp Pro Ala Ser Cys Pro Cys Cys Gln His Glu Asp Gly Arg Arg
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Pro Ser Gly Leu Gly Ser Thr Asp Ser Gly Gln Glu Gly Ser Gly Ser
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Gly Ser Ser Ala Gly Gly Glu Asp Glu Ala Asp Gly Asp Gly Ala Arg
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Ser Ser Glu Asp Gly Ala Ser Ser Glu Leu Gly Lys Glu Glu Glu Glu
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Glu Glu Gln Ala Asp Gly Ala Val Trp Leu Cys Gly Asp Val Trp Arg
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Glu Thr Arg Ala Lys Leu Arg Gly Ile Val Asp Ser Lys Tyr Phe Asn
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Arg Gly Ile Met Met Ala Ile Leu Val Asn Thr Val Ser Met Gly Ile
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Glu His His Glu Gln Pro Glu Glu Leu Thr Asn Ile Leu Glu Ile Cys
625                 630                 635                 640
Asn Val Val Phe Thr Ser Met Phe Ala Leu Glu Met Ile Leu Lys Leu
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Ala Ala Phe Gly Leu Phe Asp Tyr Leu Arg Asn Pro Tyr Asn Ile Phe
             660                 665                 670
Asp Ser Ile Ile Val Ile Ile Ser Ile Trp Glu Ile Val Gly Gln Ala
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Phe Ile Phe Ile Phe Ser Ile Leu Gly Met His Ile Phe Gly Cys Lys
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Phe Ser Leu Arg Thr Asp Thr Gly Asp Thr Val Pro Asp Arg Lys Asn
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Phe Asp Ser Leu Leu Trp Ala Ile Val Thr Val Phe Gln Ile Leu Thr
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Gln Glu Asp Trp Asn Val Val Leu Tyr Asn Gly Met Ala Ser Thr Ser
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Pro Trp Ala Ser Leu Tyr Phe Val Ala Leu Met Thr Phe Gly Asn Tyr
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Val Leu Phe Asn Leu Leu Val Ala Ile Leu Val Glu Gly Phe Gln Ala
              820                      825                      830
Glu Gly Asp Ala Asn Arg Ser Tyr Ser Asp Glu Asp Gln Ser Ser Ser
              835                      840                      845
Asn Ile Glu Glu Phe Asp Lys Leu Gln Glu Gly Leu Asp Ser Ser Gly
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Asp Pro Lys Leu Cys Pro Ile Pro Met Thr Pro Asn Gly His Leu Asp
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Pro Ser Leu Pro Leu Gly Gly His Leu Gly Pro Ala Gly Ala Ala Gly
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Pro Ala Pro Arg Leu Ser Leu Gln Pro Asp Pro Met Leu Val Ala Leu
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Gln Arg Ser Leu Ser Ser Ser Arg Ser Ser Tyr Tyr Gly Pro Trp Gly
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Arg Ser Ala Ala Trp Ala Ser Arg Arg Ser Ser Trp Asn Ser Leu Lys
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His Lys Pro Pro Ser Ala Glu His Glu Ser Leu Leu Ser Ala Glu Arg
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Gly Gly Gly Ala Arg Val Cys Glu Val Ala Ala Asp Glu Gly Pro Pro
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Arg Ala Ala Pro Leu His Thr Pro His Ala His His Val His His Gly
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Pro His Leu Ala His Arg His Arg His His Arg Arg Thr Leu Ser Leu
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Asp Asn Arg Asp Ser Val Asp Leu Ala Glu Leu Val Pro Ala Val Gly
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Lys Met Gly Asp Arg Gly Asp Arg Gly Glu Asp Glu Glu Ile Asp
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Tyr Thr Leu Cys Phe Arg Val Arg Lys Met Ile Asp Val Tyr Lys Pro
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Glu Asn Arg Phe Arg Val Leu Cys Gln Thr Ile Ile Ala His Lys Leu
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Phe Asp Tyr Val Val Leu Ala Phe Ile Phe Leu Asn Cys Ile Thr Ile
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- 18 -

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Thr Leu Lys Val Val Ser Leu Gly Leu Tyr Phe Gly Glu Gln Ala Tyr
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Ile Ile Asp Ile Val Val Ser Leu Ala Ser Ala Gly Gly Ala Lys Ile
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Leu Gly Val Leu Arg Val Leu Arg Leu Leu Arg Thr Leu Arg Pro Leu
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Arg Val Ile Ser Arg Ala Pro Gly Leu Lys Leu Val Val Glu Thr Leu
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Ile Ser Ser Leu Lys Pro Ile Gly Asn Ile Val Leu Ile Cys Cys Ala
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Phe Phe Ile Ile Phe Gly Ile Leu Gly Val Gln Leu Phe Lys Gly Lys
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Gly Asn Leu Gly Leu Leu Phe Met Leu Leu Phe Phe Ile Tyr Ala Ala
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              1940                 1945                    1950
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            35                  40                  45
Val Pro His Pro Asp Leu Ala Pro Ile Ala Phe Phe Cys Leu Arg Gln
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Thr Thr Ser Pro Arg Asn Trp Cys Ile Lys Met Val Cys Asn Pro Trp
65                  70                  75                  80
Phe Glu Cys Val Ser Met Leu Val Ile Leu Leu Asn Cys Val Thr Leu
                85                  90                  95
Gly Met Tyr Gln Pro Cys Asp Asp Met Asp Cys Leu Ser Asp Arg Cys
            100                 105                 110
Lys Ile Leu Gln Val Phe Asp Asp Phe Ile Phe Ile Phe Phe Ala Met
            115                 120                 125
Glu Met Val Leu Lys Met Val Ala Leu Gly Ile Phe Gly Lys Lys Cys
        130                 135                 140
Tyr Leu Gly Asp Thr Trp Asn Arg Leu Asp Phe Phe Ile Val Met Ala
145                 150                 155                 160
Gly Met Val Glu Tyr Ser Leu Asp Leu Gln Asn Ile Asn Leu Ser Ala
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Ile Arg Thr Val Arg Val Leu Arg Pro Leu Lys Ala Ile Asn Arg Val
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Pro Ser Met Arg Ile Leu Val Asn Leu Leu Leu Asp Thr Leu Pro Met
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Leu Gly Asn Val Leu Leu Leu Cys Phe Phe Val Phe Phe Ile Phe Gly
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Tyr Gln Pro Glu Glu Asp Asp Glu Met Pro Phe Ile Cys Ser Leu Ser
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Gly Asp Asn Gly Ile Met Gly Cys His Glu Ile Pro Pro Leu Lys Glu
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Gln Gly Arg Glu Cys Cys Leu Ser Lys Asp Asp Val Tyr Asp Phe Gly
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Ala Gly Arg Gln Asp Leu Asn Ala Ser Gly Leu Cys Val Asn Trp Asn
305                 310                 315                 320
Arg Tyr Tyr Asn Val Cys Arg Thr Gly Ser Ala Asn Pro His Lys Gly
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Ala Ile Asn Phe Asp Asn Ile Gly Tyr Ala Trp Ile Val Ile Phe Gln
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Val Ile Thr Leu Glu Gly Trp Val Glu Ile Met Tyr Tyr Val Met Asp
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Ala His Ser Phe Tyr Asn Phe Ile Tyr Phe Ile Leu Leu Ile Ile Val
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Gly Ser Phe Phe Met Ile Asn Leu Cys Leu Val Val Ile Ala Thr Gln
385                 390                 395                 400
Phe Ser Glu Thr Lys Gln Arg Glu His Arg Leu Met Leu Glu Gln Arg
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Gln Arg Tyr Leu Ser Ser Ser Thr Val Ala Ser Tyr Ala Glu Pro Gly
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Gln Ala Leu Gly Pro Glu Ala Pro Ala Pro Ala Lys Pro Gly Pro His
465                      470                      475                      480
Ala Lys Glu Pro Arg His Tyr Gln Leu Cys Pro Gln His Ser Pro Leu
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Asp Ala Thr Pro His Thr Leu Val Gln Pro Ile Pro Ala Thr Leu Ala
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Ser Asp Pro Ala Ser Cys Pro Cys Cys Gln His Glu Asp Gly Arg Arg
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Pro Ser Gly Leu Gly Ser Thr Asp Ser Gly Gln Glu Gly Ser Gly Ser
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Gly Ser Ser Ala Gly Gly Glu Asp Glu Ala Asp Gly Asp Gly Ala Arg
545                      550                      555                      560
Ser Ser Glu Asp Gly Ala Ser Ser Glu Leu Gly Lys Glu Glu Glu Glu
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Glu Glu Gln Ala Asp Gly Ala Val Trp Leu Cys Gly Asp Val Trp Arg
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Glu Thr Arg Ala Lys Leu Arg Gly Ile Val Asp Ser Lys Tyr Phe Asn
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Arg Gly Ile Met Met Ala Ile Leu Val Asn Thr Val Ser Met Gly Ile
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Glu His His Glu Gln Pro Glu Glu Leu Thr Asn Ile Leu Glu Ile Cys
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Ala Ala Phe Gly Leu Phe Asp Tyr Leu Arg Asn Pro Tyr Asn Ile Phe
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Asp Ser Ile Ile Val Ile Ile Arg Pro Pro Thr Ala Ala Ser Tyr Leu
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Tyr Pro Gly Pro Ala Leu Arg Asp Arg Ser Ile Trp Glu Ile Val Gly
        690                      695                      700
Gln Ala Asp Gly Gly Leu Ser Val Leu Arg Thr Phe Arg Leu Leu Arg
705                      710                      715                      720
Val Leu Lys Leu Val Arg Phe Met Pro Ala Leu Arg Arg Gln Leu Val
            725                      730                      735
Val Leu Met Lys Thr Met Asp Asn Val Ala Thr Phe Cys Met Leu Leu
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Met Leu Phe Ile Phe Ile Phe Ser Ile Leu Gly Met His Ile Phe Gly
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Cys Lys Phe Ser Leu Arg Thr Asp Thr Gly Asp Thr Val Pro Asp Arg
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Lys Asn Phe Asp Ser Leu Leu Trp Ala Ile Val Thr Val Phe Gln Ile
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Leu Thr Gln Glu Asp Trp Asn Val Val Leu Tyr Asn Gly Met Ala Ser
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Thr Ser Pro Trp Ala Ser Leu Tyr Phe Val Ala Leu Met Thr Phe Gly
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Asn Tyr Val Leu Phe Asn Leu Leu Val Ala Ile Leu Val Glu Gly Phe
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Gln Ala Glu Gly Asp Ala Asn Arg Ser Tyr Ser Asp Glu Asp Gln Ser
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Ser Ser Asn Ile Glu Glu Phe Asp Lys Leu Gln Glu Gly Leu Asp Ser
865                      870                      875                      880
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Ser Gly Asp Pro Lys Leu Cys Pro Ile Pro Met Thr Pro Asn Gly His
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Leu Asp Pro Ser Leu Pro Leu Gly Gly His Leu Gly Pro Ala Gly Ala
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Ala Gly Pro Ala Pro Arg Leu Ser Leu Gln Pro Asp Pro Met Leu Val
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Ala Leu Gly Ser Arg Lys Ser Ser Val Met Ser Leu Gly Arg Met Ser
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Tyr Asp Gln Arg Ser Leu Ser Ser Ser Arg Ser Ser Tyr Tyr Gly Pro
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Trp Gly Arg Ser Ala Ala Trp Ala Ser Arg Arg Ser Ser Trp Asn Ser
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Leu Lys His Lys Pro Pro Ser Ala Glu His Glu Ser Leu Leu Ser Ala
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Glu Arg Gly Gly Gly Ala Arg Val Cys Glu Val Ala Ala Asp Glu Gly
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Pro Pro Arg Ala Ala Pro Leu His Thr Pro His Ala His His Val His
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His Gly Pro His Leu Ala His Arg His Arg His His Arg Arg Thr Leu
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Val Gly Ala His Pro Arg Ala Ala Trp Arg Ala Ala Gly Pro Ala Pro
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Gly His Glu Asp Cys Asn Gly Arg Met Pro Ser Ile Ala Lys Asp Val
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Phe Thr Lys Met Gly Asp Arg Gly Asp Arg Gly Glu Asp Glu Glu Glu
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Ile Asp Tyr Thr Leu Cys Phe Arg Val Arg Lys Met Ile Asp Val Tyr
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Lys Pro Asp Trp Cys Glu Val Arg Glu Asp Trp Ser Val Tyr Leu Phe
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Ser Pro Glu Asn Arg Phe Arg Val Leu Cys Gln Thr Ile Ile Ala His
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Lys Leu Phe Asp Tyr Val Val Leu Ala Phe Ile Phe Leu Asn Cys Ile
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Thr Ile Ala Leu Glu Arg Pro Gln Ile Glu Ala Gly Ser Thr Glu Arg
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Ile Phe Leu Thr Val Ser Asn Tyr Ile Phe Thr Ala Ile Phe Val Gly
1185                1190                1195                1200
Glu Met Thr Leu Lys Val Val Ser Leu Gly Leu Tyr Phe Gly Glu Gln
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Ala Tyr Leu Arg Ser Ser Trp Asn Val Leu Asp Gly Phe Leu Val Phe
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Val Ser Ile Ile Asp Ile Val Val Ser Leu Ala Ser Ala Gly Gly Ala
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Lys Ile Leu Gly Val Leu Arg Val Leu Arg Leu Leu Arg Thr Leu Arg
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Pro Leu Arg Val Ile Ser Arg Ala Pro Gly Leu Lys Leu Val Val Glu
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Thr Leu Ile Ser Ser Leu Lys Pro Ile Gly Asn Ile Val Leu Ile Cys
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Cys Ala Phe Phe Ile Ile Phe Gly Ile Leu Gly Val Gln Leu Phe Lys
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Tyr Phe Ile Ser Phe Leu Leu Ile Val Ser Phe Phe Val Leu Asn Met
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Cys His Thr Arg Leu Leu Ile His Ser Met Cys Thr Ser His Tyr Leu
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1745                1750                1755                1760
Gly Ala Gly Gly Gly Gly Asp Thr Glu Gly Gly Leu Cys Arg Arg Cys
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Leu Glu Asp Pro Thr Ala Cys Pro Pro Gly Arg Lys Asp Ser Lys Gly
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Glu Leu Asp Pro Pro Glu Pro Met Arg Val Gly Asp Leu Gly Glu Cys
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Phe Phe Pro Leu Ser Ser Thr Ala Val Ser Pro Asp Pro Glu Asn Phe
        1890                1895                1900
Leu Cys Glu Met Glu Glu Ile Pro Phe Asn Pro Val Arg Ser Trp Leu
1905                1910                1915                1920
Lys His Asp Ser Ser Gln Ala Pro Pro Ser Pro Phe Ser Pro Asp Ala
            1925                1930                1935
Ser Ser Pro Leu Leu Pro Met Pro Ala Glu Phe Phe His Pro Ala Val
            1940                1945                1950
Ser Ala Ser Gln Lys Gly Pro Glu Lys Gly Thr Gly Thr Gly Thr Leu
        1955                1960                1965
Pro Lys Ile Ala Leu Gln Gly Ser Trp Ala Ser Leu Arg Ser Pro Arg
        1970                1975                1980
Val Asn Cys Thr Leu Leu Arg Gln Val Pro Thr Pro Pro Arg Pro
1985                1990                1995
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- 27 -